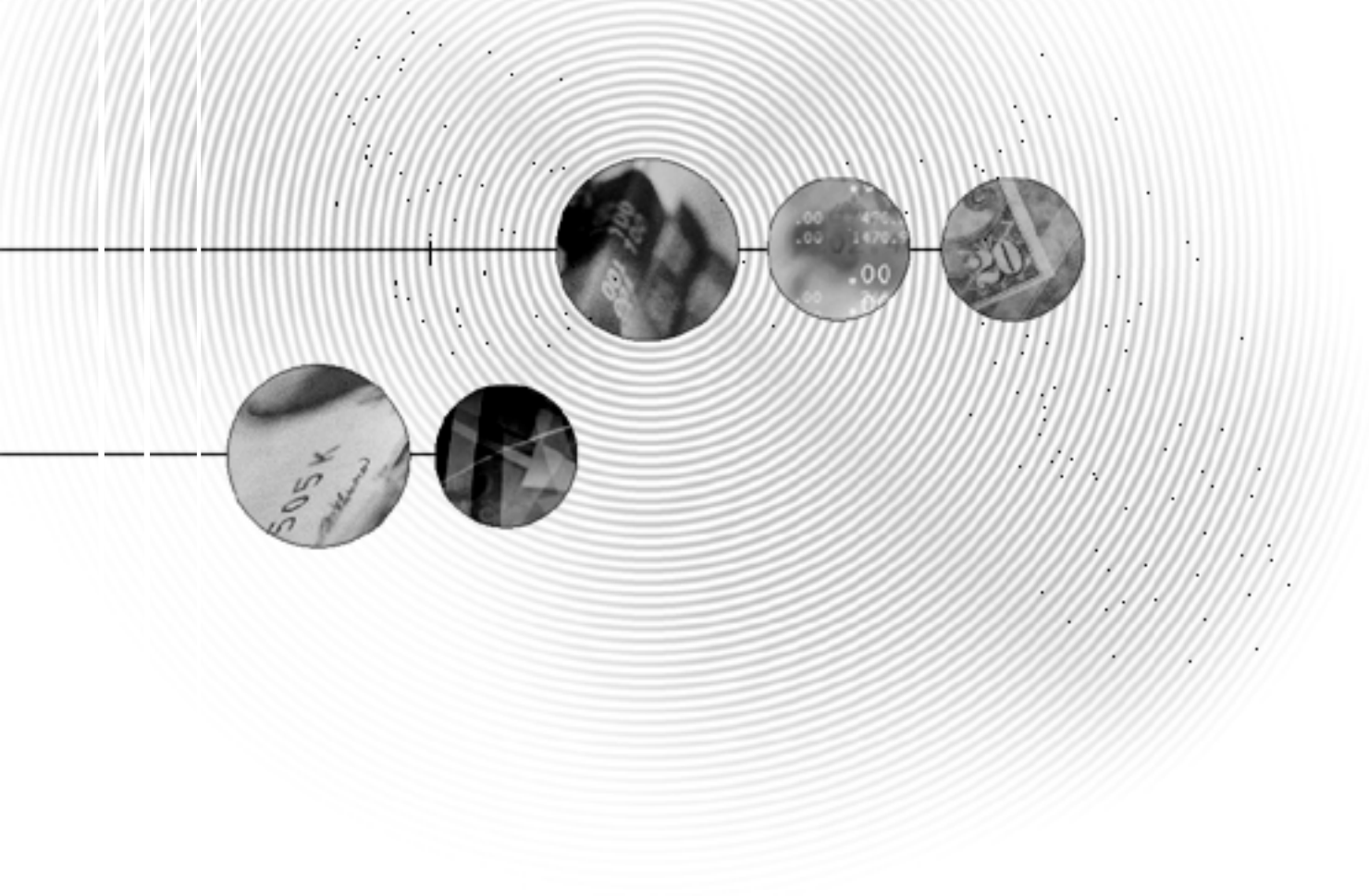
Impact FXS Digital Communications System

Installation and Application Instructions for the Passive-Backplane-Based System Computer Components



IM189—322.02 05/00
printed in U.S.A.

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The Rising Star™

Comdial® strives to design the features in our communications systems to be fully interactive with one another. However, this is not always possible, as the combinations of accessories and features are too varied and extensive to insure total feature compatibility.

Accordingly, some features identified in this publication will not operate if some other feature is activated. Comdial disclaims all liability relating to feature non-compatibility or associated in any way with problems which may be encountered by incompatible features. Notwithstanding anything contained in this publication to the contrary, Comdial makes no representation herein as to the compatibility of features.

Issued: 2/12/97

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1 Introducing the Impact FXS System Computer Components

The Impact FXS system computer consists of the following elements:

- passive backplane
- single bad computer,
- power supply assembly,
- disk drives—includes hard drive, 3.5 inch floppy drive, and compact disk (CD-ROM) drive,
- individual, application-specific circuit boards, including:
  - video board,
  - voice board,
  - serial port expansion board,
  - network board.

You may find that the factory has installed everything that your system needs, and you do not need to install any of these elements during initial installation. However, if you need to add or replace a part in the field at a later date, you will need some instruction. This publication serves that purpose by describing the installation of the basic elements into the Impact FXS system computer. This publication also includes any unique setup and application information needed to make a particular element fully operational.

Handling Static-Sensitive Components

A computer circuit board is a very sensitive assembly and is susceptible to damage caused by electrostatic discharge. You can damage its components very easily by handling the circuit board improperly. This damage is not easily detectable yet may cause critical data errors during operation. Electrostatic discharge damage is permanent—it cannot be repaired; therefore, you must take precautions to prevent it from occurring.

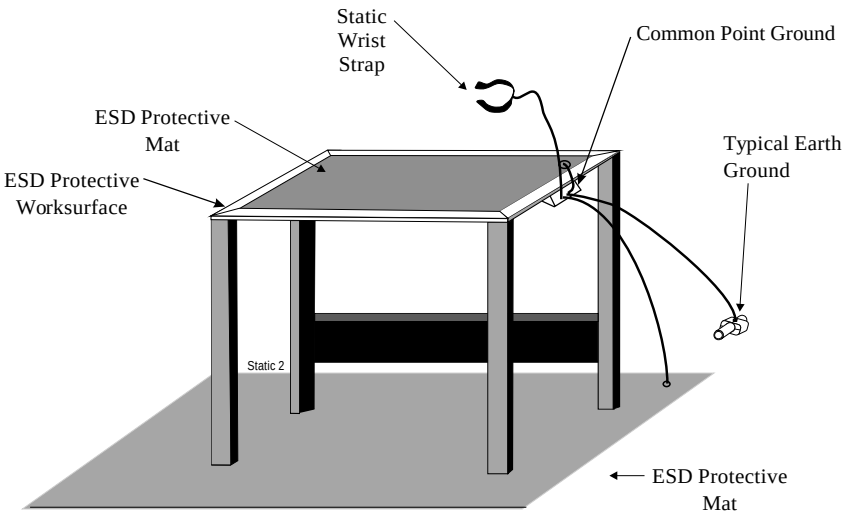
You can refer to Comdial publication IMI01–005, *Handling of Electrostatically Sensitive Components*, for general electrostatic discharge information. The following paragraph discusses specific handling precautions that will help prevent electrostatic discharge damage.

Before handling any circuit board in the Impact FXS common equipment cabinet, place the cabinet on a conductive mat, and ground that mat to a good earth ground. (The third wire ground of the AC power line is an acceptable grounding point.) A grounded conductive mat provides a safe electrostatic discharge path. Always prepare such a static-safe work area, and place the equipment cabinet on it before you service any circuit boards.

Always supply yourself with a static discharge wrist strap, properly ground it to a good earth ground, and wear it every time you handle electronic circuit boards. (The factory includes a static discharge wrist strap for your use with the Impact FXS system.)

- Install your static discharge wrist strap on your bare wrist, and adjust it for a snug fit. Be sure that the strap is touching bare skin and is not isolated by clothing.
- Connect the wrist strap cord between the wrist strap and an AC or earth ground

The factory ships uninstalled circuit boards for the Impact FXS system in static protection bags for safe keeping. Keep a board in its bag until you get it to a static-safe work area and are properly wearing a static discharge wrist strap. You can then safely remove the board from its static protection bag and install it in the system.



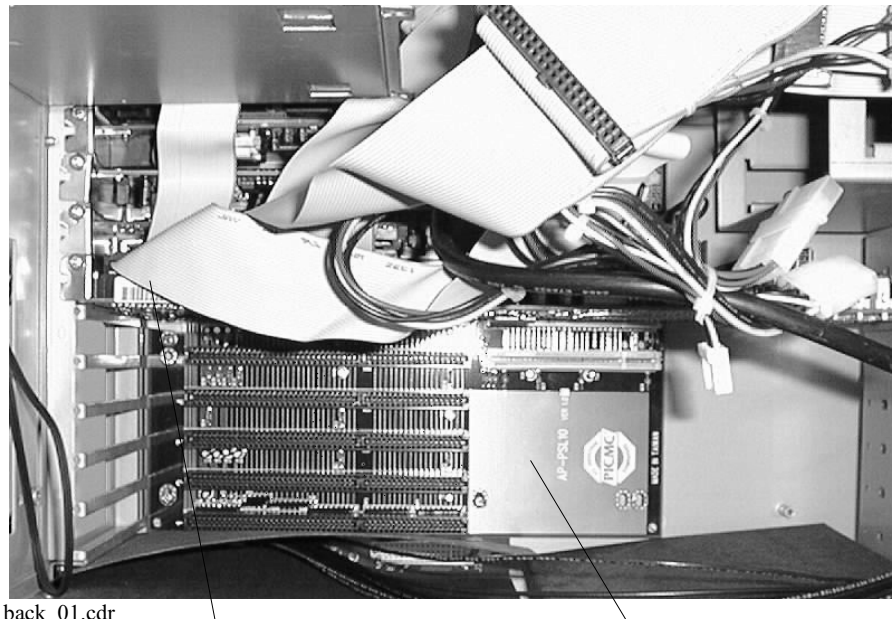
Detailing a Static-Safe Work Area

2 Installing the Passive Backplane

The passive backplane is a host circuit board that meets specific standards for Peripheral Computer Interface (PCI) architecture. The PICMG (**P**CI **I**ndustrial **C**omputer **M**anufacturers **G**roup, Rogers Communications, Wakefield MA, 01880) consortium has developed PCI standards that offer industrial equipment suppliers a set of common specifications that they can use in industrial computer telephony applications. In the Impact FXS CTI server system, the PCI standard passive backplane provides edge connectors for connecting a PCI-based single-board computer and other PCI-based application-specific circuit boards.

Installing the Passive Backplane

Remove the passive backplane from its protective packaging and, attach it at the top of the Impact FXS equipment cabinet using the supplied hardware.

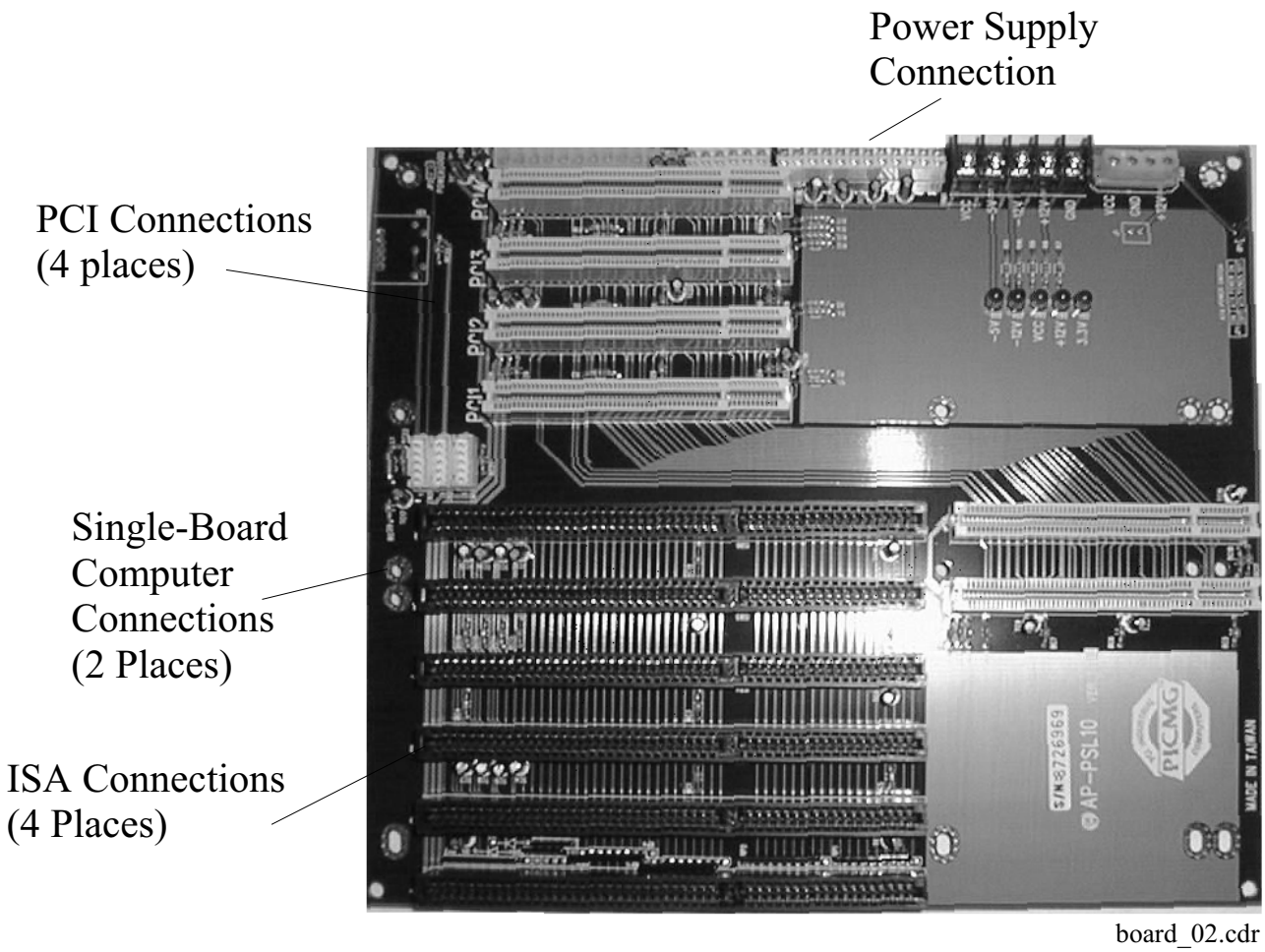


Locating the Backplane

Connecting the Circuit Boards

The passive backplane provides four PCI (half-length) slots at the top of the board, two ISA slots for the single-board computer near the middle of the board and four ISA (full-length) slots on the remainder of the board. The PCI slots are identical with one another as are the ISA slots.

The PCI slots accept the video board and the network board. These slots also accept a modem board and a sound board when needed. The top two ISA slots accept the single-board computer the remaining ISA slots accepts the serial port expansion board, the voice board, and any special-purpose application circuit boards as needed.



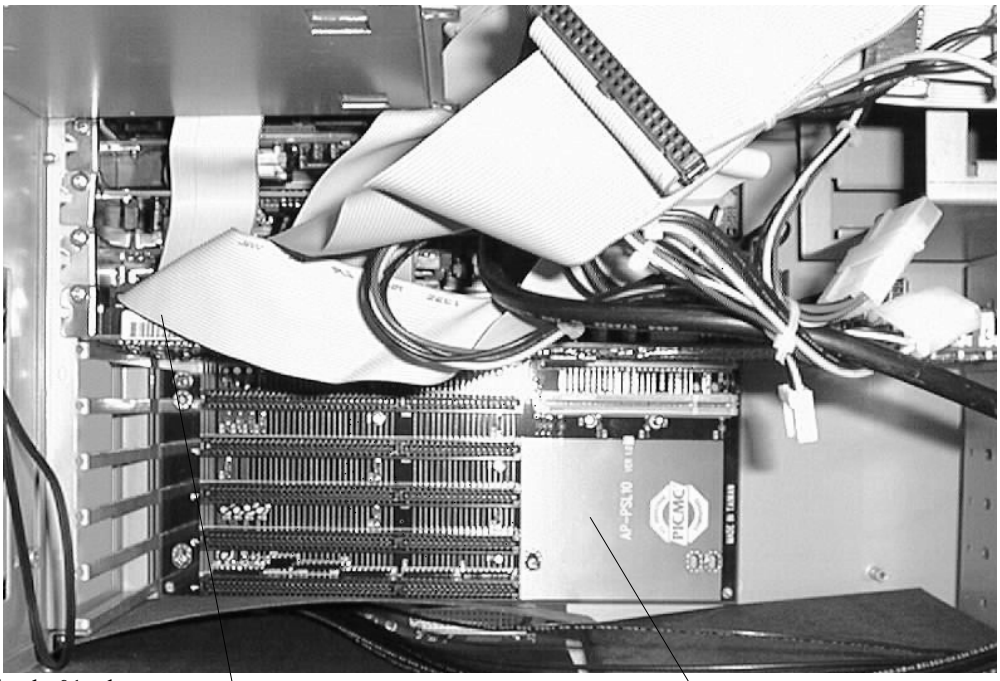
board_02.cdr

Locating the Circuit Board Connections

3 Installing the Single-Board Computer

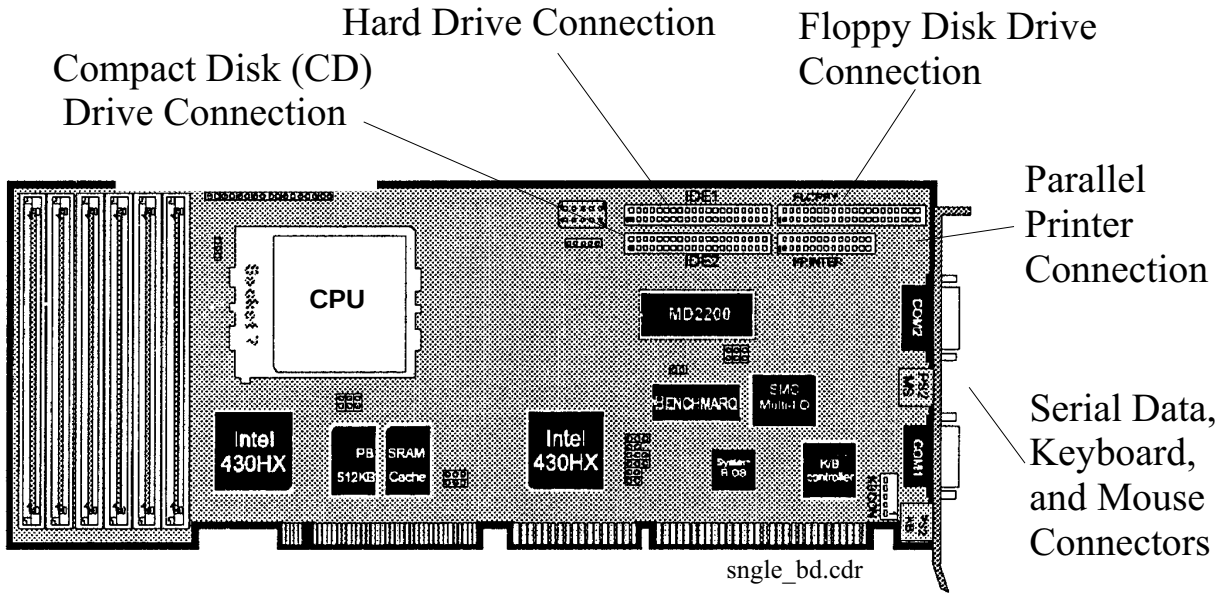
The single-board computer is a complete industrial computing system that is compatible with the PICMG Version 2 PCI/ISA Standard. The single-board computer connects to the passive backplane to provide the computing needs of the Impact FXS CTI server system. By employing a standardized single-board computer and passive backplane arrangement, designers have the flexibility to customize the server parameters to meet a wide range of industrial requirements.

The single-board computer connects in either of the two top-most ISA (full-length) board slots on the passive backplane. The computer provides connections for the supporting storage media devices such as CD drives, hard drives, and floppy disk drives plus provides keyboard, mouse, parallel printer, and serial data connections on its mounting plate.



Mounting the Single-Board Computer

Locating the Interface Connections



Locating the Computer Connections

4 Installing the Impact FXS Computer Power Supply

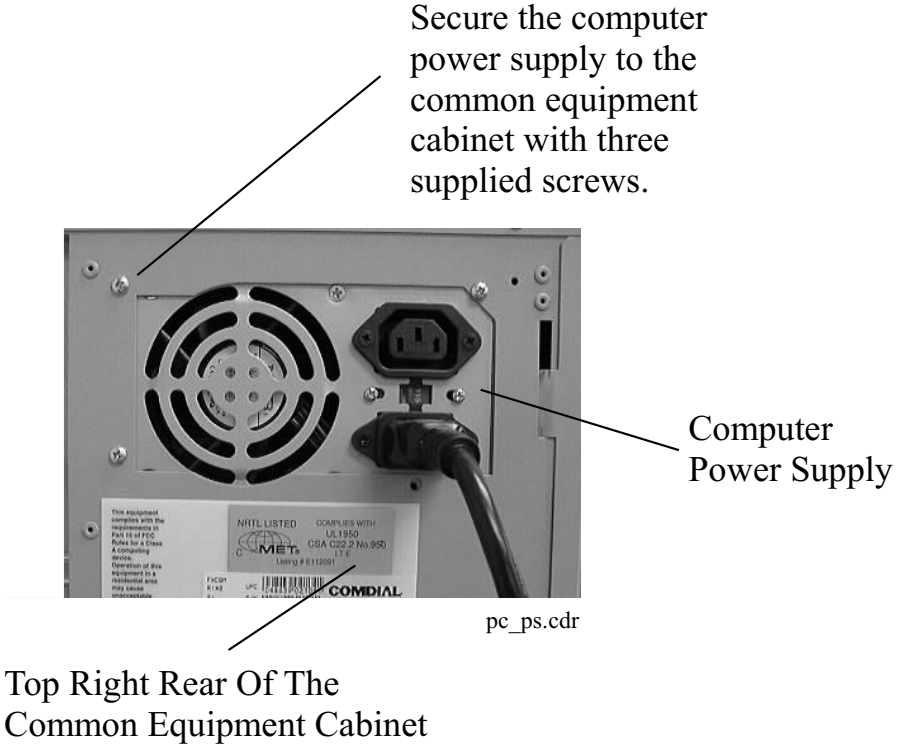
The power supply provides the power needed to run the Impact FXS system computer, the special-purpose application circuit boards, the floppy disk drive, the hard disk drive and the compact disk drive. The power supply delivers either 110 VAC or 220 VAC depending upon the setting of a switch.

CAUTION

Be sure the switch setting matches the local voltage specifications.

Installing the Power Supply

The computer power supply is located in the opening at the top right rear of the common equipment cabinet. It attaches to the cabinet with three supplied machine screws.


Secure the computer power supply to the common equipment cabinet with three supplied screws.
Computer Power Supply
Top Right Rear Of The Common Equipment Cabinet
pc_ps.cdr

Locating the Computer Power Supply

Connecting Power to the Internal Components

The computer power supply has a multipurpose power cable as an integral part of its assembly. This cable terminates in several connectors of different types to mate with various system components. In general, the connectors are keyed for proper insertion; however, there are several items that you must take into consideration.

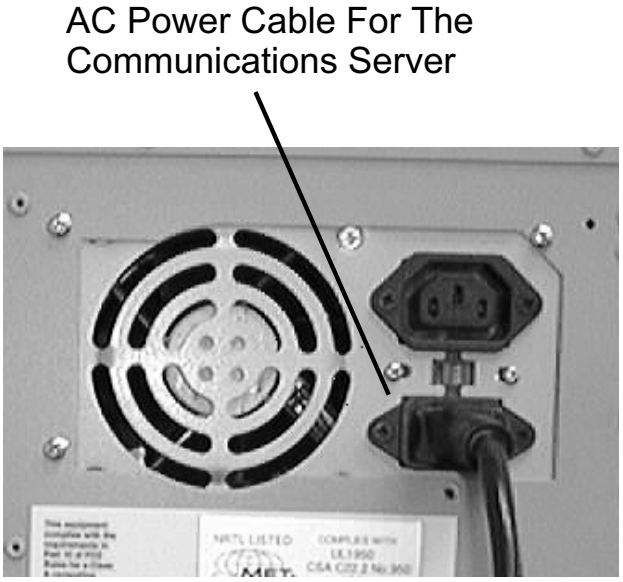
1. While the two power plugs for the passive backplane are keyed so that they mate with the computer connection in only one direction, it is possible to reverse the position of these two plugs. To avoid this reversal,

   (a) note that each plug has two black wires along with several other wires of different colors,

   (b) orient these two plugs so that the black wires in each connector are next to each other and located at the center of the computer connector,

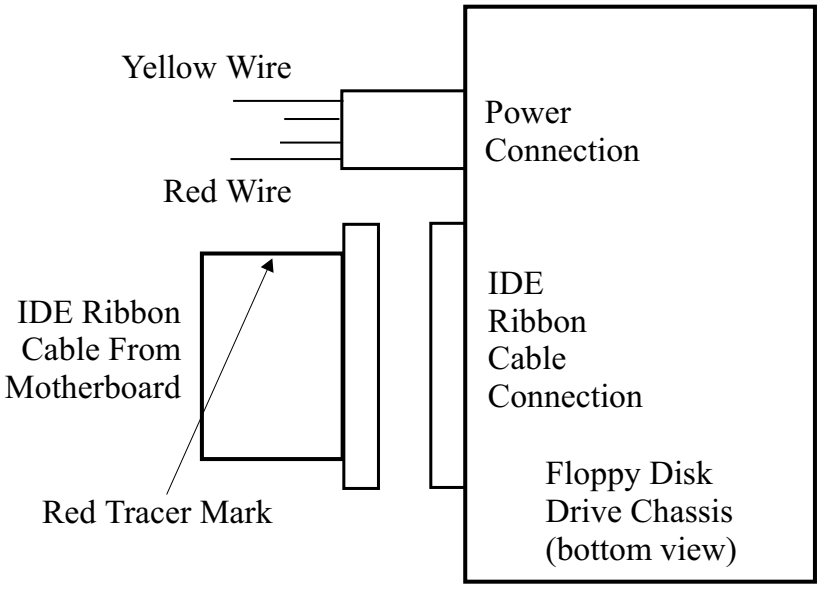
   (c) press the plugs onto the computer connector in this orientation.

2. The large white power plugs for the drive assemblies are keyed and will mate with their corresponding connectors on the drives in only one orientation. The floppy disk drive requires a small power plug, and this plug is not keyed. It is possible to improperly plug the small plug onto its mate on the drive chassis. To insure that you mate the plug and connection properly, orient the plug so that its red wire is closest to the IDE ribbon cable connector and its yellow wire is closest to the edge of the drive assembly chassis.



ac_cord1.cdr

Orienting The Passive Backplane Power Plugs



pc_drive.cdr

Orienting the Floppy Drive Power Plug

Connecting AC Power

For the AC power connection to the power supply, use the same dedicated, 115VAC 15 AMP circuit, with a third-wire ground, supplied to a standard electrical outlet (NEMA 5-15R), and

protected by its own circuit breaker that you use for the telephony portion of the system.

NOTE: While you may notice a physical difference in the appearance of the two supplied AC power cables, there is no electrical difference. You can interchange the two AC power cables between the telephony and computer portions of the Impact FXS system as you see fit.

To provide protection against surges and spikes that may appear on the AC line to the computer portion of the Impact FXS system, install a plug-in power line surge protector between the AC power cord of the installed equipment and the AC outlet. Normally, you can use one multi-outlet surge protector for both the telephony and computer portions of the Impact FXS system.

The equipment cabinet employs a fan-cooled power supply; do not block the air flow to this fan.

CAUTION

Per Underwriter Laboratory (UL) requirements, DO NOT attach or secure the AC power cable to the surface of the mounting location in any manner.

ac_cord.cdr

Connecting the AC Power Cable

Notes

5 Installing the Hard Disk Drive

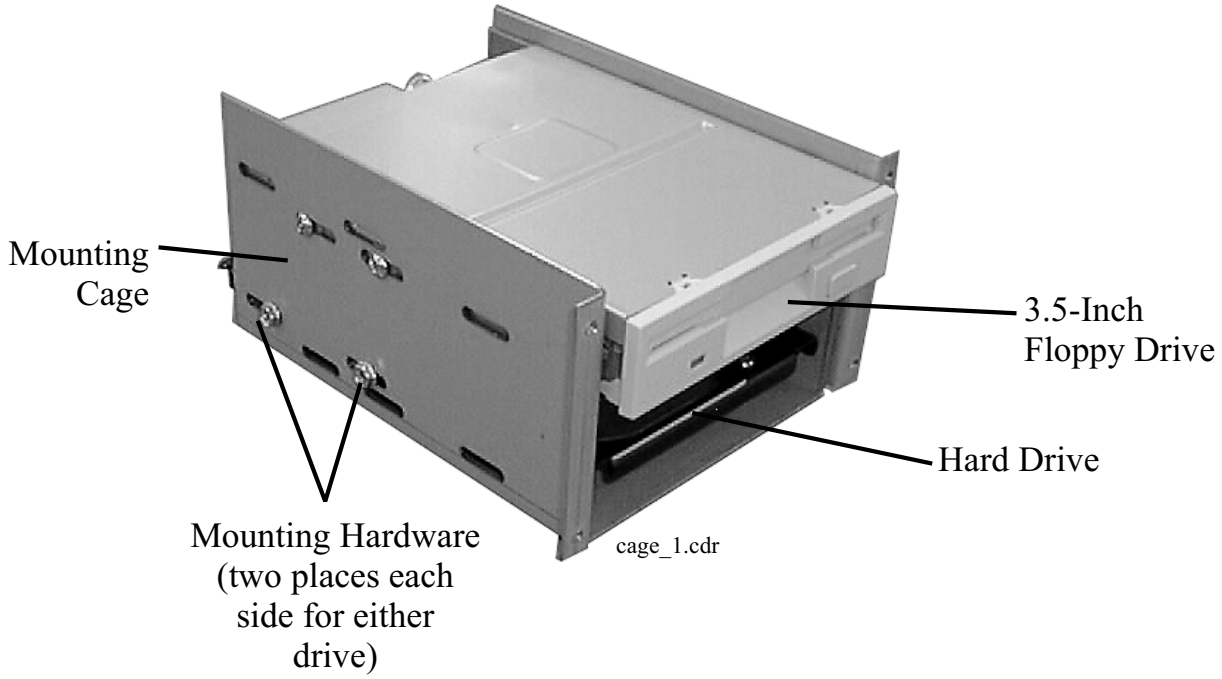
The Impact FXS system computer requires a hard disk drive assembly. The hard disk drive mass storage unit used for storing large amounts of data for the Computer/Telephony Integration (CTI) features that the Impact FXS system provides.

Installing the Hard Disk Drive

The hard disk drive mounts in a drive cage along with the computer's floppy disk drive assembly. The cage mounts in an opening at the top front of the Impact FXS common equipment cabinet.

Mounting the Hard Disk Drive in the Cage

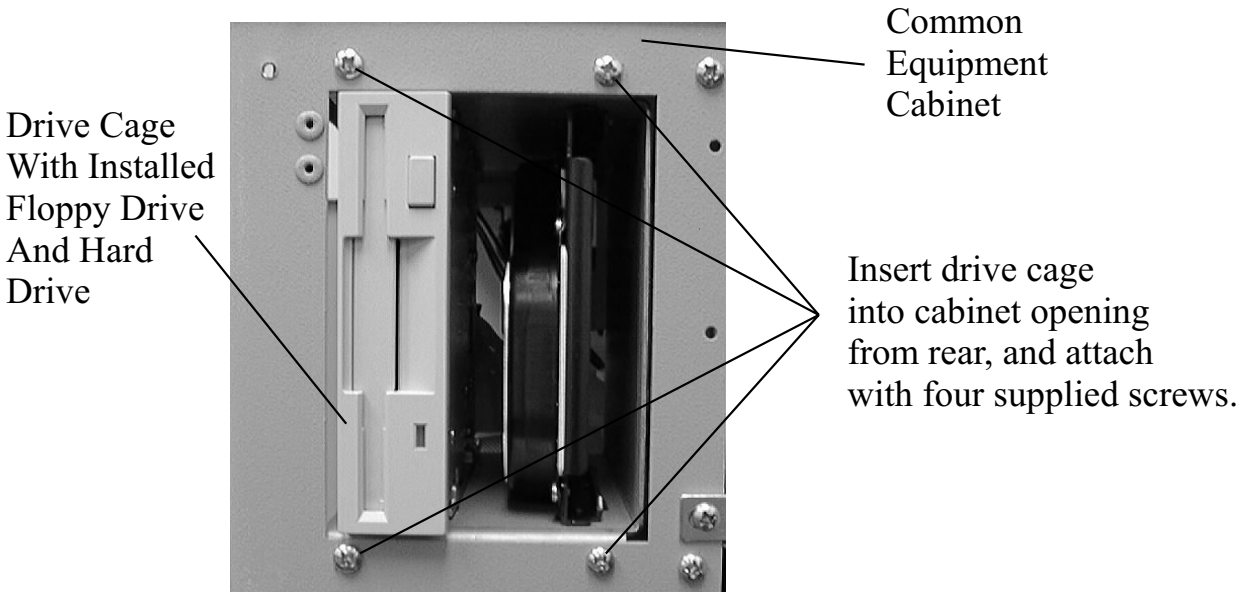
Mount the hard disk drive in the drive cage and attach it to the cage with the four supplied screws—two on each side of the cage.



Installing the Drive in the Drive Cage

Mounting the Drive Cage in the Cabinet

Mount the drive cage in the common equipment cabinet by inserting it from the inside of the cabinet into the opening at the top front of the cabinet, and attaching it with the four supplied screws.



Installing the Drive Cage in the Cabinet

Connecting the Hard Disk Drive

There are two cable connections that you must make to the floppy disk drive—the power connection, and the IDE data connection.

Connecting the Hard Drive Power Plug

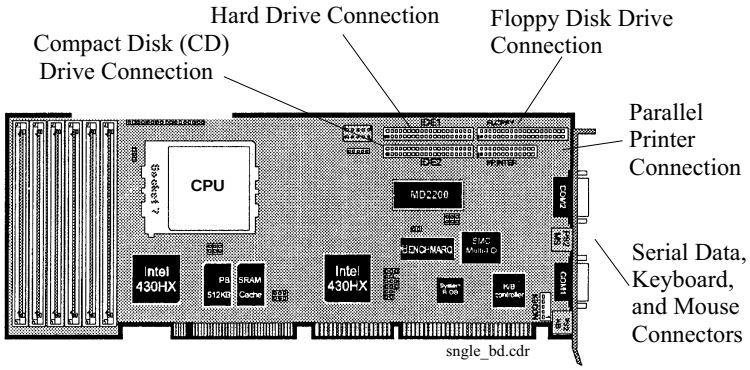
The computer power supply's multipurpose cable provides a plug that mates with the hard disk drive power connector. To make the power connection take the following steps:

1. Locate one of the large white plugs attached to the power cable bundle. There are several plugs available. Choose the plug that is most convenient to use.
2. The power plug is keyed—it is not possible to connect it improperly. Simply locate the hard drive's power connection at the rear of the hard drive assembly chassis, and mate the connectors.

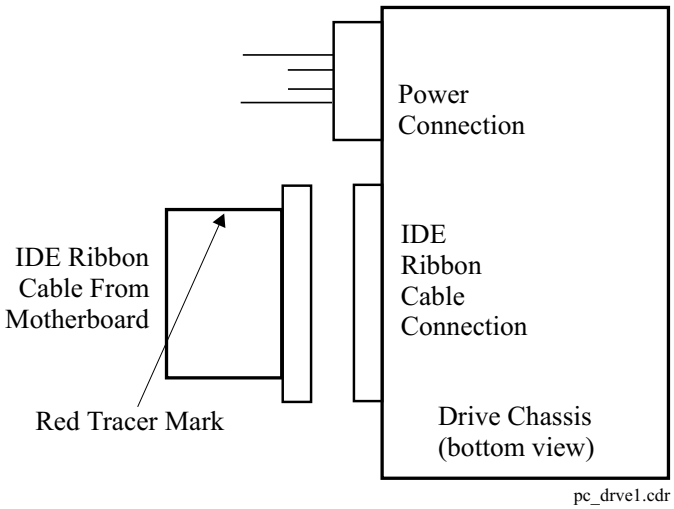
Connecting the Hard Drive IDE Data Cables

The IDE data cables are the flat ribbon cables that connect between the computer's computer and the hard disk drive. The IDE cables are keyed on the computer end. You can only connect them to the single-board computer in one orientation. This is not the case when you connect them to the drive assemblies. At these connections, **there are two considerations that you must note:**

1. IDE ribbon cables provide several connectors along their length. This allows one data cable to serve two drives when that need occurs. In the case of the drive assemblies in the Impact FXS system computer, use the first connector on the cable that properly mates with the drive's IDE data connector.



Locating the Hard Drive IDE Connection



Orienting the IDE Connection

2. The IDE connector is not keyed at the drive end. The proper orientation is to connect the pin 1 of the ribbon cable connector to the pin 1 of the disk drive connector. Another method to help orient the connection properly is to align the cable connector so that its red tracer is closest to the drive's power connector. Sometimes it is hard to discern these connector markings making it possible to mate the connection improperly. A sure indication of improper connection is a steady-on condition of the disk drive's status light when you operate the drive. Should the drive's status light remain on steady, power down the system, and reverse the mating of the drive's IDE connection.

6 Installing the Floppy Disk Drive

The Impact FXS system computer requires a 3.5-inch floppy disk drive. You can use this drive to load programs and software data into the computer's memory and to store data that the computer has generated.

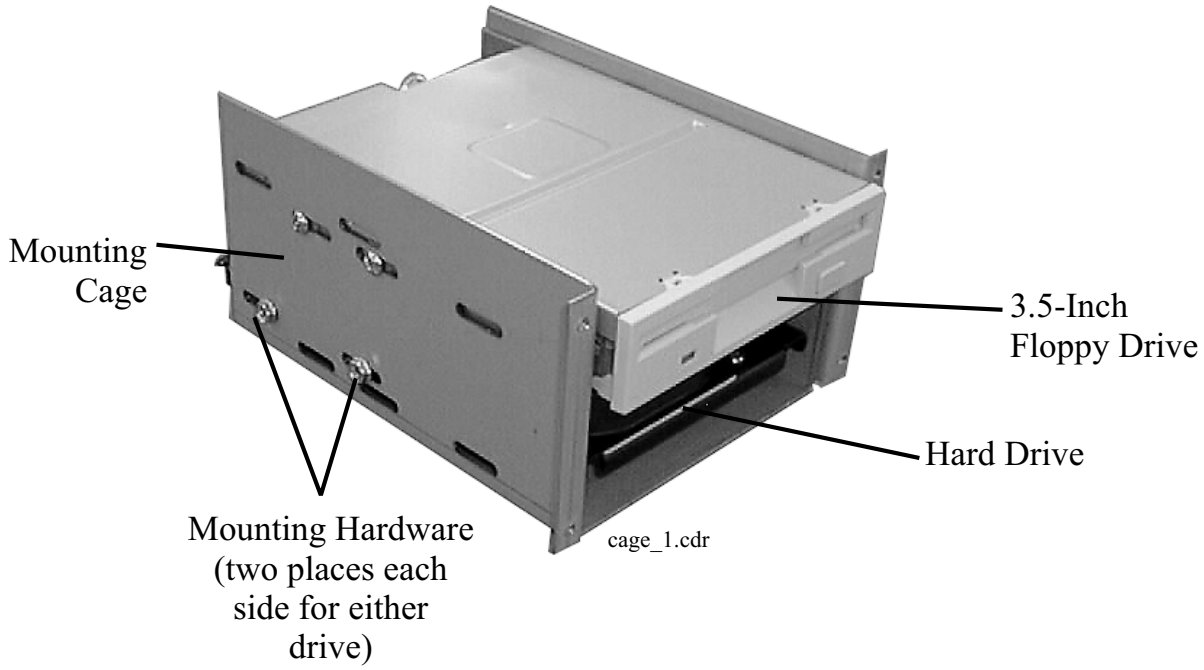
NOTE: Computer consultants advise that you should consider data that you store on floppy disks to be temporary. Computer consultants , designers of floppy disk technology, and manufacturers of floppy disks recommend that you back up any data that you store on floppy disks. Some advisors even suggest that you back up floppy disk stored data at least twice.

Installing the Floppy Disk Drive

The floppy disk drive assembly mounts in a drive cage along with the computer's hard drive. The cage mounts in an opening at the top front of the Impact FXS' common equipment cabinet.

Mounting the Floppy Disk Drive in the Cage

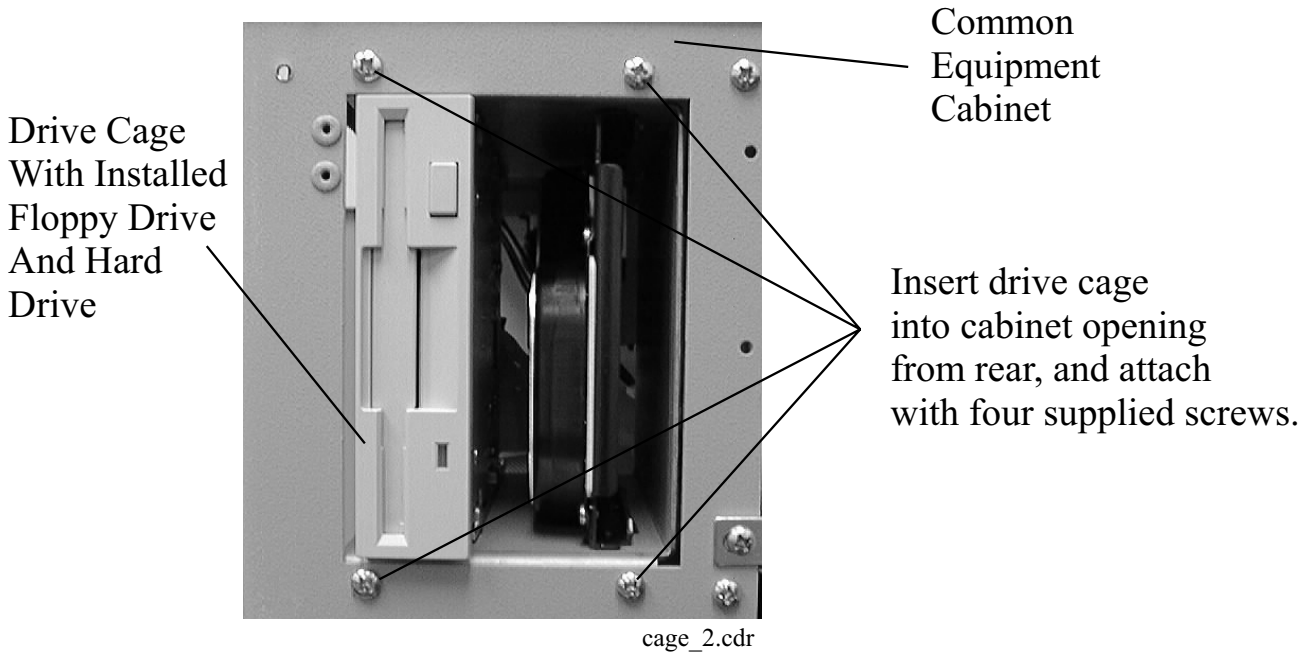
Mount the floppy disk drive in the drive cage and attach it to the cage with the four supplied screws—two on each side of the cage.



Installing the Drive in the Drive Cage

Mounting the Drive Cage in the Cabinet

Mount the drive cage in the common equipment cabinet by inserting it from the inside of the cabinet into the opening at the top front of the cabinet, and attaching it with the four supplied screws..



Installing the Drive Cage in the Cabinet

Connecting the Floppy Disk Drive

There are two cable connections that you must make to the floppy disk drive—the power connection, and the IDE data connection.

Connecting the Floppy Drive Power Plug

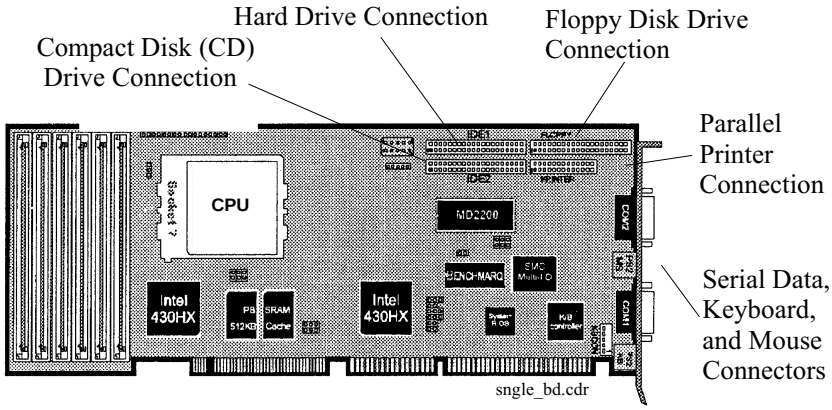
The computer power supply's multipurpose cable provides a plug that mates with the floppy disk power connector. To make the power connection take the following steps:

1. Locate one of the smaller white plugs attached to the power cable bundle. There are several available. Choose the one that is most convenient to use.
2. ***The power plug is not keyed***. It is possible to improperly plug the small plug onto its mate on the drive chassis. To insure that you mate the plug and connection properly, orient the plug so that its red wire is closest to the IDE ribbon cable connector and its yellow wire is closest to the edge of the drive assembly chassis.

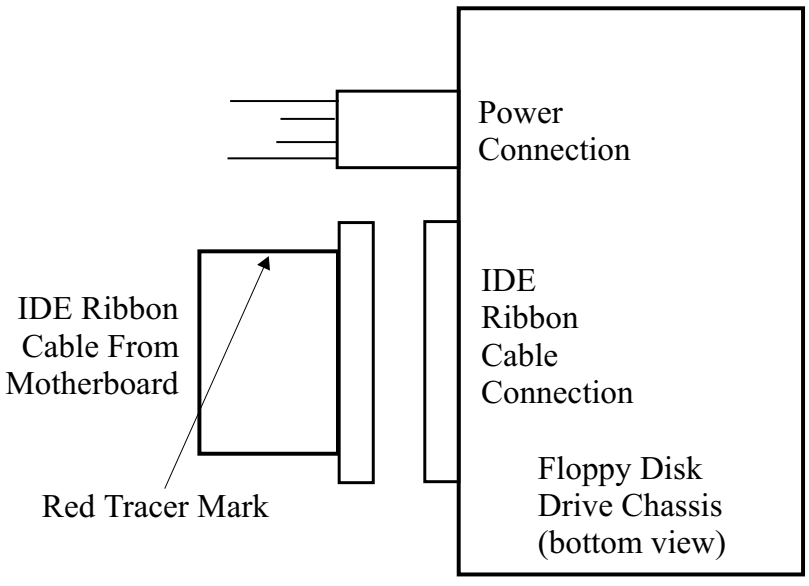
Connecting the Floppy Drive IDE Data Cable

The IDE data cables are the flat ribbon cables that connect between the computer and the floppy disk drive. The IDE cables are keyed on the computer end. You can only connect them to the computer in one orientation. This is not the case when you connect them to the drive assemblies. At these connections, **there are two considerations that you must note:**

1. IDE ribbon cables provide several connectors along their length. This allows one data cable to serve two drives when that need occurs. In the case of the floppy drive in the Impact FXS system computer, use the first connector on the cable that properly mates with the floppy disk drive's IDE data connector.



Locating The Floppy Drive IDE Connection



Orienting The IDE Connection

2. **The IDE connector is not keyed**. The proper orientation is to connect the pin 1 of the ribbon cable connector to the pin 1 of the disk drive connector. Another method to help orient the connection properly is to align the cable connector so that its red tracer marking is closest to the floppy disk drive's power connector. Sometimes it is hard to discern these connector markings making it possible to mate the connection improperly. A sure indication of improper connection is a steady-on condition of the disk drive's status light when you operate the drive. Should the drive's status light remain on steady, power down the system, and reverse the mating of the drive's IDE connection.

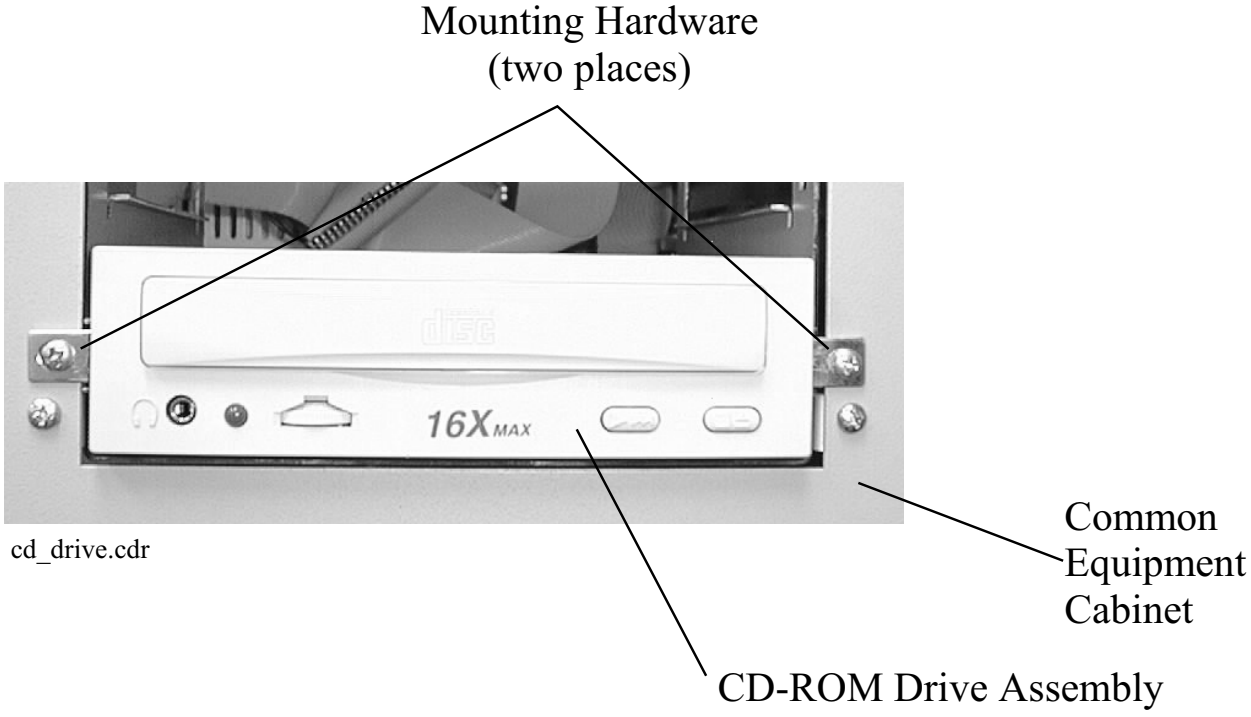
7 Installing the Compact Disk (CD–ROM) Drive

The Impact FXS system computer provides a compact disk (CD–ROM) drive assembly. The CD–ROM is a read-only data device that stores large amounts of data (typically, one CD–ROM stores up to 640 Mb of data). Producers of software often make their application programs available on CD–ROM because of its ability to store large files of data on one disk. By including a CD–ROM drive assembly, the Impact FXS system computer provides a means for you to load large application programs without handling large quantities of floppy disks.

Installing the CD–ROM Drive

The CD–ROM drive mounts in an opening on the Impact FXS common equipment cabinet that is to the right of the floppy drive/hard drive cage opening and just above the front panel.

Mount the CD–ROM drive in the common equipment cabinet by inserting it from the front of the cabinet into the opening, and attaching it with the two supplied screws.



cd_drive.cdr

Installing the CD Drive

Connecting the CD–ROM Drive

There are two cable connections that you must make to the CD–ROM drive—the power connection, and the IDE data connection.

Connecting the CD–ROM Drive Power Plug

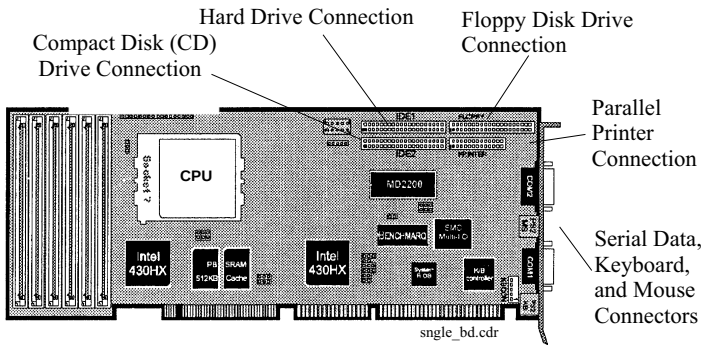
The computer power supply's multipurpose cable provides a plug that mates with the CD–ROM drive power connector. To make the power connection take the following steps:

1. Locate one of the large white plugs attached to the power cable bundle. There are several plugs available. Choose the one that is most convenient to use.
2. The power plug is keyed, and it is not possible to connect it improperly. Simply locate the CD-ROM drive's power connection at the rear of it's assembly chassis, and mate the connectors.

Connecting the CD–ROM Drive IDE Data Cable

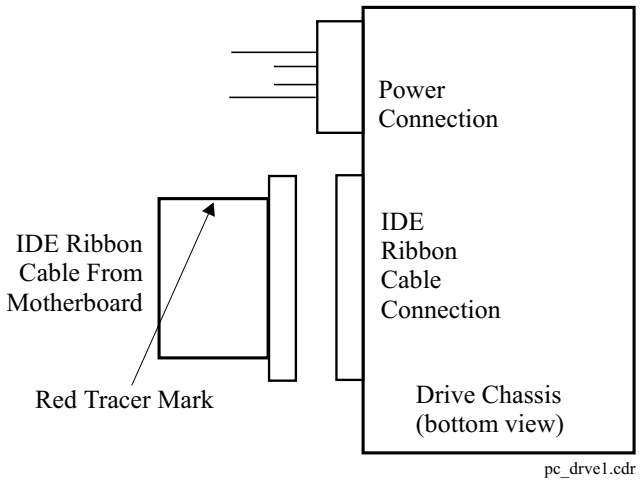
The IDE data cables are the flat ribbon cables that connect between the computer and the CD-ROM drive. The IDE cables are keyed on the computer end. You can only connect them to the computer in one orientation. This is not the case when you connect them to the drive assemblies. At these connections, **there are two considerations that you must note:**

1. IDE ribbon cables provide several connectors along their length. This allows one data cable to serve two drives when that need occurs. In the case of the CD-ROM drive in the Impact FXS system computer, use the first connector on the cable that properly mates with the hard disk drive's IDE data connector.



Locating the CD-ROM Drive Connection

2. **The IDE connector is not keyed**. The proper orientation is to connect the pin 1 of the ribbon cable connector to the pin 1 of the drive connector. Another method to help orient the connection properly is to align the cable connector so that its red tracer marking is closest to the drive's power connector. Sometimes it is hard to discern these connector markings making it possible to mate the connection improperly. A sure indication of improper connection is a steady-on condition of the drive's status light when you operate the drive. Should the drive's status light remain on steady, power down the system, and reverse the mating of the drive's IDE connection.



Orienting the IDE Connection

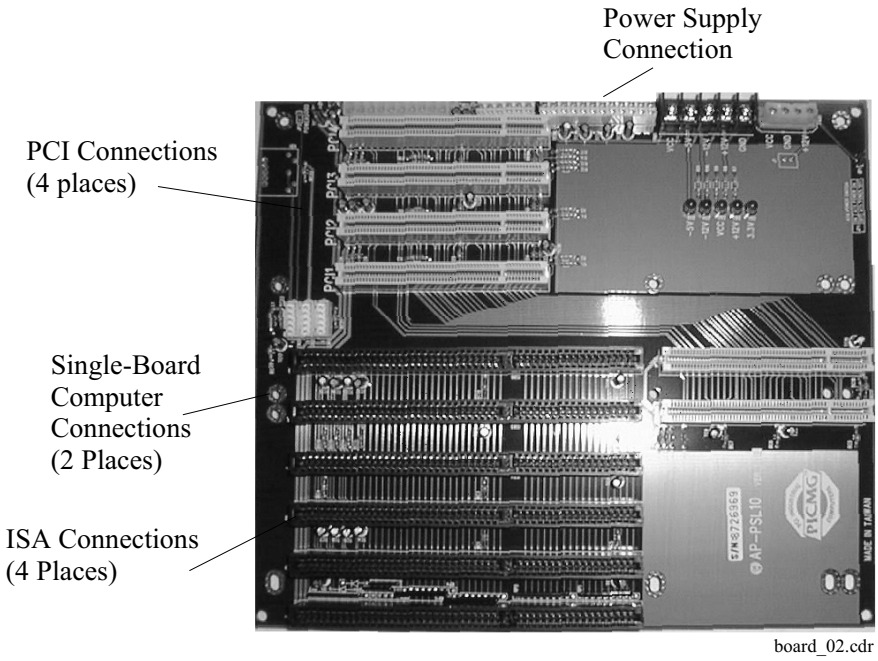
Notes

8 Installing the Video Board

The video board provides the interface between the Impact FXS system computer and the video monitor. It provides standard resolutions and color depths to the Computer/Telephony Integration (CTI) application software that is available for use with the Impact FXS system.

Install the video board in the passive backplane's first PCI slot in the manner described below.

1. Notice that the video board has a wide metal connector bracket along one edge that contains a 15-pin female cable connector. This is the connection for the video monitor. You must remove the blank plate from the common equipment cabinet that covers the opening in front of the first PCI slot to make room for the video board's connector bracket. Save the screw because you will need it later.
2. The board's edge connector is keyed so you can only mate the board to the backplane connection in one orientation. Align the board's metal connector bracket with the opening in the cabinet, and mate the board to the passive backplane's first PCI slot. Do not force the board into the connection—it should slide into place with gentle pressure when oriented properly.
3. Once you have mated the board with the backplane, secure the board by attaching its metal connector bracket to the common equipment cabinet using the screw removed in step 1. This action secures the board in place and provides a rigid connection for the video monitor cable.



Locating the Video Driver Board Connection

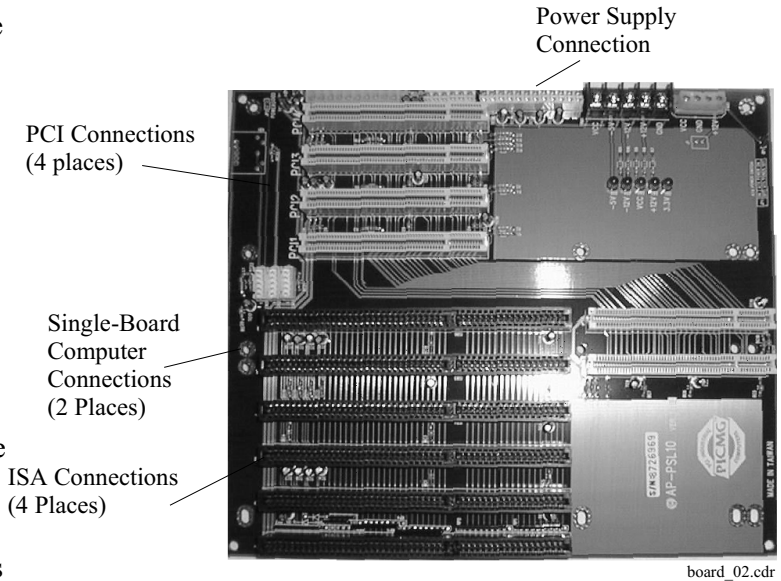
Notes

9 Installing the Serial Port Expansion Board

The serial port expansion circuit board provides the computer with four additional serial ports. Extra serial ports are very important when site requirements dictate that the Impact FXS system provide several different Computer/Telephony Integration (CTI) applications.

You must install the serial port expansion board in the third ISA slot on the passive backplane. The following illustration points out this location. Install the serial port expansion board in the manner described below.

1. Notice that the board has a wide metal connector bracket along one edge that contains a multiple-pin cable connector. This connector accepts a breakout cable that makes the individual serial data connections available. You must remove the blank plate from the common equipment cabinet that covers the opening in front of the third ISA slot to make room for the board's connector bracket. Save the screw because you will need it later.
2. The board's edge connector is keyed so you can only mate the board to the backplane connection in one orientation. Align the board's metal connector bracket with the opening in the cabinet, and mate the board to the third ISA slot. Do not force the board into the connection—it should slide into place with gentle pressure when oriented properly.
3. Once you have mated the board with the computer, secure the board by attaching its metal connector bracket to the common equipment cabinet using the screw removed in step 1. This action secures the board in place and provides a rigid connection for the serial data device cables.



Locating the Serial Port Expansion Board Connection

Notes

10 Installing the Voice Board

The voice board is a Dialogic* voice processing board that, along with the Versatile Voice Processing (VVP) application software, provides a full-featured voice mail and automatic attendant application for system users. The voice board allows connection between industry-standard station ports on the telephony portion and the computer portion of the Impact FXS system. The voice board and associated cables provide the electronic interface while the VVP application software provides the user interface to the voice board.

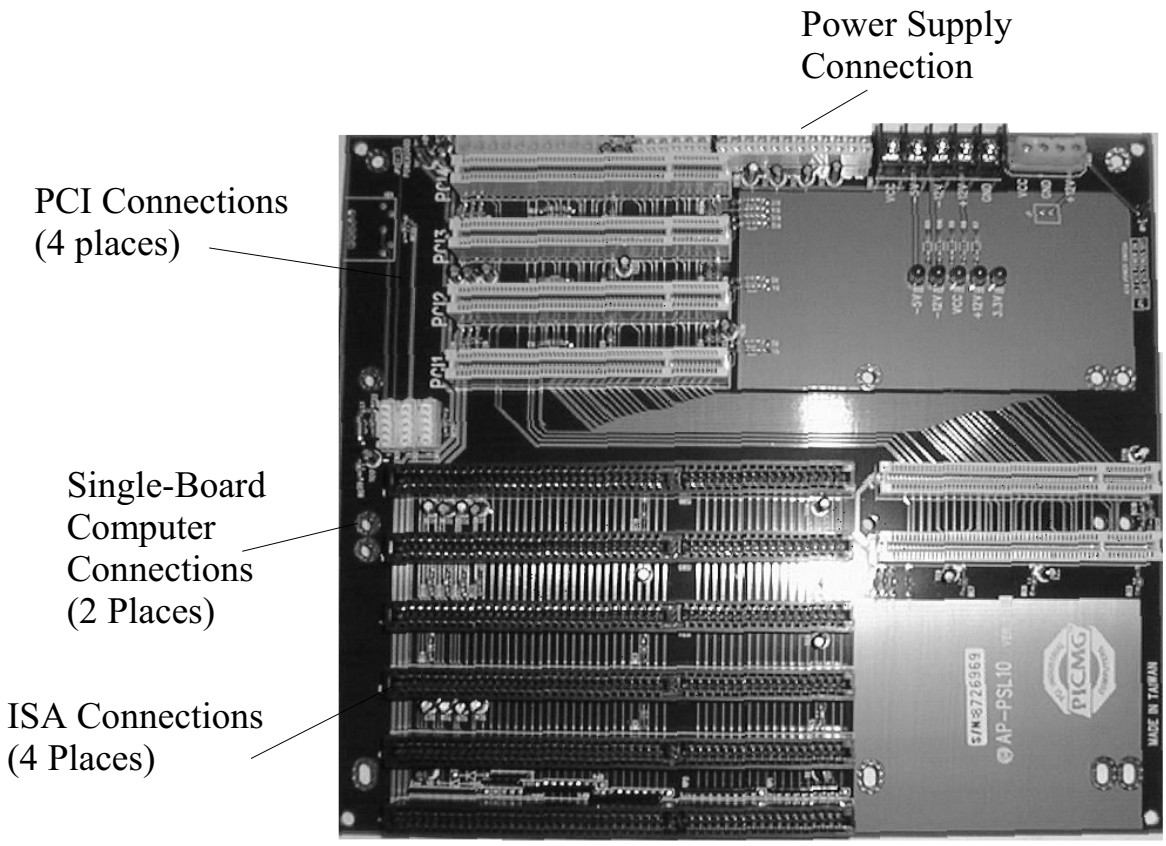
The voice board cable-connects to four industry-standard station ports and provides four voice processing ports supplied to two standard modular telephone jacks, which are configured as RJ-14C jacks.

**Dialogic is a registered trademark of the Dialogic Communications Corp. Franklin, TN 37064*

Installing the Voice Board

You must install the voice board in the second ISA slot.

1. Notice that the board has a wide metal connector bracket along one edge that contains the voice processing ports. These are connections for telephony equipment. You must remove from the common equipment cabinet the blank plate that covers the opening in front of the second ISA slot to make room for the board's connector bracket. Save the screw because you will need it later.
2. The board's edge connector is keyed so you can only mate the board to the computer's computer connection in one orientation. Align the board's metal connector bracket with the opening in the cabinet, and mate the board to the computer's second ISA slot. Do not force the board into the connection—it should slide into place with gentle pressure when oriented properly.
3. Once you have mated the board with the computer, attach the board's metal connector bracket to the equipment cabinet using the screw removed in step 1. This action secures the board in place and provides a rigid connection for telephony equipment cables.



Locating the Voice Board Connection

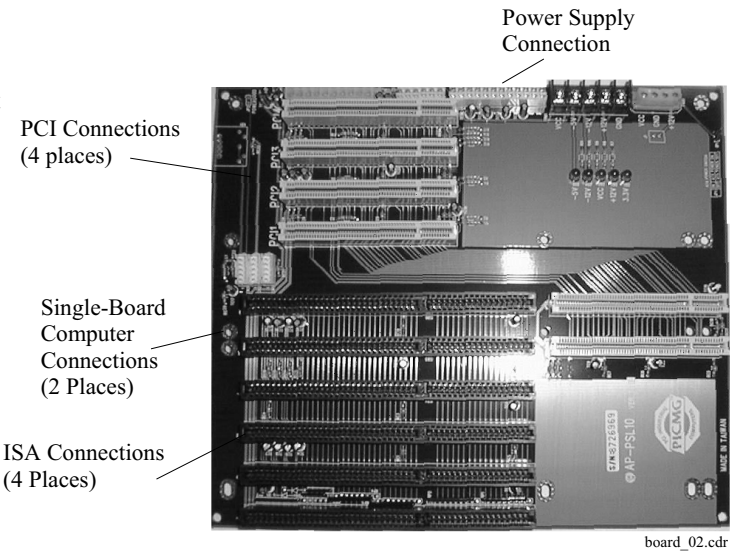
11 Installing the Network Interface Board

The network interface board (NIC) provides the Impact FXS system computer with an Ethernet interface between it and external data equipment. Ethernet is a data protocol for creating a local area network or LAN that connects together devices such as computers, data printers, work stations, terminals, and so forth within the same location.

Installing the Network Board

You must install the NIC in the passive backplane's second PCI slot. The following illustration points out this location. Install the network interface board in the manner described below.

1. Notice that the board has a wide metal connector bracket along one edge that contains cable connectors. These are connections for the external network cables. You must remove the blank plate from the common equipment cabinet that covers the opening in front of the second PCI slot to make room for the board's connector bracket. Save the screw because you will need it later.
2. The board's edge connector is keyed so you can only mate the board to the backplane connection in one orientation. Align the board's metal connector bracket with the opening in the cabinet, and mate the board to the computer's second PCI slot. Do not force the board into the connection—it should slide into place with gentle pressure when oriented properly.
3. Once you have mated the board, secure the board by attaching its metal connector bracket to the common equipment cabinet using the screw removed in step 1. This action secures the board in place and provides a rigid connection for the external network cables.



Locating the Network Board Connection

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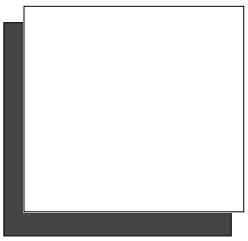

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IMI89–322.02 05/00
printed in U.S.A.

Printed in U.S.A.
709810-724 Rev.1